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Docket No. 5408/0A237-US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination of :

U.S. Patent No. 5,565,109 : of Philip G. Sweeny

Control No. 90/004,700 : Art Unit 1724

Filing Date July 22, 1997 : Examiner P. Hruskoci

For: HYDANTOIN-ENHANCED HALOGEN EFFICACY
IN PULP AND PAPER APPLICATIONS

RESPONSE TO NOTICE RE DEFECTIVE PAPER

Hon. Commissioner of
Patents and Trademarks
Washington, DC 20231

Sir:

This is in response to the Notice re Defective Paper mailed January 27, 1999 in the above-identified reexamination.

Please substitute the following amendment for the amendment filed on December 8, 1998.

Please amend the subject application as follows:

IN THE SPECIFICATION:

Rewrite the paragraph at column 2, lines 16-26, as follows:

In another embodiment of the instant invention, it has been discovered that certain halogenated N-hydrogen compounds per se also serve as outstanding slimicides for the treatment of circulating water containing organic matter such as in the pulp and paper industry. These compounds show enhanced efficacy over the hypochlorite in these applications. This result is particularly surprising since organic matter, generally over 0.2 wt. % and frequently over 0.5 wt. %, would be expected to interfere with the biocidal efficacy of such compounds. Typically, in the case of papermaking, these processing streams have from 0.2 to 3 wt. % organic matter, most frequently from 0.5 to 2 wt. %, comprised of approximately 95-99% pulp fiber as well as additional materials such as sizing rosin and starch.

IN THE CLAIMS:

Please cancel claims 1 and 13-15, without prejudice.

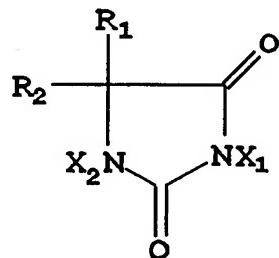
Please amend claims 2-4 and 8 as follows:

2. (twice amended) The [method] papermaking process of claim [1] 16 wherein [the] a mixture of the slimicide and the N-hydrogen compound is formed just prior to the addition to said circulating water system.

3. (twice amended) The [method] papermaking process of claim [1] 16
wherein the slimicide is chlorine gas or sodium hypochlorite.

4. (twice amended) The [method] papermaking process of claim [1] 16
wherein from 0.1 to 10 ppm of active slimicide (expressed as Cl₂) is maintained in the
circulating water system.

8. (twice amended) The [method] papermaking process of claim [1] 16
wherein said slimicide is a halogenated hydantoin of the formula:



wherein R₁ and R₂ are independently selected from the group consisting of lower alkyl having 1 to 12 carbon atoms, and wherein X₁ and X₂ are independently selected from the group consisting of bromine, chlorine and hydrogen, and at least one of X₁ and X₂ being bromine or chlorine.

Please add the following claims:

--16. In a process for making paper wherein from 0.2 to 3% of organic matter comprising from 95 to 99% pulp fiber is maintained in a circulating water

slurry in the presence of at least one papermaking additive selected from sizing, starch, and pH regulating agent, the improvement of initiating said process in the presence of a slimicidally effective amount of an N-hydrogen compound and a slimicide in a molar ratio of from 0.1:1 to 10:1 in said circulating water slurry; wherein said N-hydrogen compound is p-toluenesulfonamide, dimethylhydantoin, methylethylhydantoin, cyanuric acid, succinimide, urea, 4,4-dimethyl-2-oxazolidinone, and glycouril and said slimicide is chlorine gas, bromine, bromine chloride, an alkali metal or alkaline earth metal hypohalite, a halogenated hydantoin, a halogenated cyanurate, or halogenated cyanuric acid and the amount of the N-hydrogen compound present in said circulating water system is sufficient to enhance the biological efficacy of the slimicide and reduce by-product formation.

17. The papermaking process of claim 16 wherein the system is at a pH of from about 5.0 to about 5.5.

18. In a process for making paper wherein from 0.2 to 3% of organic matter comprising from 95 to 99% pulp fiber is maintained in a circulating water slurry in the presence of at least one papermaking additive selected from sizing, starch, and pH regulating agent, the improvement of initiating said process in the presence of a slimicidally effective amount of an N-hydrogen compound and a slimicide in a molar ratio of from 0.1:1 to 10:1 in said circulating water slurry; wherein said N-hydrogen compound is p-toluenesulfonamide, dimethylhydantoin,

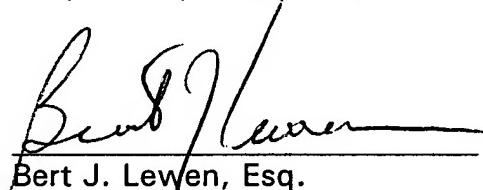
claims 16-18 have been added. Therefore, claims 2-4, 8, 11, 12, and 16-18 are pending.

The amendments to claims 2-4 and 8 have been made relative to the patent claims as required by 37 C.F.R. 1.530(d)(2)(i)(A). Also, the paragraph at column 2, lines 16-29, has been written out in full as required by 37 C.F.R. 1.530(d)(1)(i).

The patentee wishes to thank the Examiner for the courtesies extended during the telephone conferences. Should the instant amendment be in any way deficient, the Examiner is respectfully requested to call patentee's attorney by phone.

Respectfully submitted,

Dated: February 3, 1999


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